

CLAIMS

1. A hydraulic brake pressure intensifying apparatus (10) comprising:

a fluid cylinder (40) axially extending between an inlet end (44) and an outlet
5 end (46); and

a piston assembly (52) disposed in said fluid cylinder (40) for regulating fluid
flow between said inlet end (44) and said outlet end (46) and including a first piston (54)
having a first forward end (54a) adjacent said inlet end (44) and a first outer annular wall
(100) extending from said first forward end (54a);

10 said apparatus (10) characterized by one of said fluid cylinder (40) and said
first outer annular wall (100) defining an aperture (110) for allowing fluid to flow into said
piston assembly (52) from said inlet end (44) of said fluid cylinder (40).

2. A hydraulic brake intensifying apparatus (10) as set forth in claim 1 wherein
said first outer annular wall (100) defines a plurality of apertures (110).

15 3. A hydraulic brake intensifying apparatus (10) as set forth in claim 2 wherein
said plurality of apertures (110) are equally spaced along said first outer annular wall (100).

4. A hydraulic brake intensifying apparatus (10) as set forth in claim 1 wherein
said fluid cylinder (40) defines a cylindrical chamber (42) extending therethrough with said
piston assembly (52) slidably disposed in said cylindrical chamber (42).

20 5. A hydraulic brake intensifying apparatus (10) as set forth in claim 4 wherein
said fluid cylinder (40) includes a first end wall (116) for sealing said chamber (42) proximal
to said inlet end (44) and a second end wall (118) for sealing said chamber (42) proximal to
said outlet end (46).

6. A hydraulic brake intensifying apparatus (10) as set forth in claim 1 wherein
25 said first end wall (116) defines said aperture (110) adjacent to said first outer annular wall

(100) for allowing the fluid to flow around said first outer annular wall (100) and into said piston assembly (52).

7. A hydraulic brake intensifying apparatus (10) as set forth in claim 6 wherein said first end wall (116) defines a plurality of apertures (110) adjacent to said first outer annular wall (100).

8. A hydraulic brake intensifying apparatus (10) as set forth in claim 5 wherein said first end wall (116) comprises a plug (48) coaxial with said first piston (54) and having a diameter less than a diameter of said cylindrical chamber (42) at said inlet end (44) for sealing said chamber (42) at said inlet end (44).

9. A hydraulic brake intensifying apparatus (10) as set forth in claim 8 wherein said plug (48) defines said aperture (110) adjacent to said first outer annular wall (100) for allowing the fluid to flow around said first outer annular wall (100) and into said piston assembly (52).

10. A hydraulic brake intensifying apparatus (10) as set forth in claim 9 wherein said plug (48) defines a plurality of apertures (110) adjacent to said first outer annular wall (100).

11. A hydraulic brake intensifying apparatus (10) as set forth in claim 1 wherein said first piston (54) defines a cylindrical outer surface (120) and said first outer annular wall (100) coaxially extends from said cylindrical outer surface (120) at said first forward end (54a).

12. A hydraulic brake intensifying apparatus (10) as set forth in claim 1 wherein said piston assembly (52) further includes an inner piston (56) concentrically disposed for telescopic sliding movement within said first piston (54).

13. A hydraulic brake intensifying apparatus (10) as set forth in claim 12 wherein said piston assembly (52) further includes a stabilizer seal (107) disposed between said first piston (54) and said inner piston (56) for preventing fluid from leaking therebetween.

14. A hydraulic brake intensifying apparatus (10) as set forth in claim 13 wherein
5 said piston assembly (52) further includes a glide ring (108) disposed between said first piston (54) and said inner piston (56) for further preventing fluid from leaking therebetween.

15. A hydraulic brake intensifying apparatus (10) as set forth in claim 1 wherein said piston assembly (52) further includes a glide ring (108) disposed between said first piston (54) and said fluid cylinder (40) for preventing fluid from leaking therebetween.

10 16. A hydraulic brake intensifying apparatus (10) as set forth in claim 12 wherein said inner piston (56) defines a flow passage (62) for communicating the fluid between said inlet end (44) and said outlet end (46) of said fluid cylinder (40).

17. A hydraulic brake intensifying apparatus (10) as set forth in claim 16 further comprising a valve member (66) disposed in said flow passage (62) for regulating fluid flow
15 through said flow passage (62).

18. An improved braking system for a vehicle comprising:

(a) a brake (11, 13);

(b) a master cylinder (30, 130) for applying pressure to fluid and supplying the fluid to said brake (11, 13);

5 (c) a hydraulic fluid line (34, 134) extending from said master cylinder (30, 130) for channeling the fluid to said brake (11, 13); and

(d) a brake pressure intensifying apparatus (10) incorporated into said hydraulic fluid line (34, 134) for exponentially amplifying the pressure of the fluid from said master cylinder (30, 130) to said brake (11, 13) and comprising:

10 (i) a fluid cylinder (40) axially extending between an inlet end (44) and an outlet end (46); and

(ii) a piston assembly (52) disposed in said cylinder (40) for regulating fluid flow between said inlet end (44) and said outlet end (46) and including a first piston (54) having a first forward end (54a) and a first outer annular wall (100) extending from said first forward end (54a);

15 (iii) said system characterized by one of said fluid cylinder (40) and said first outer annular wall (100) defining an aperture (110) for allowing fluid to flow into said piston assembly (52) from said inlet end (44) of said fluid cylinder (40).

19. An improved braking system as set forth in claim 18 wherein said plurality of apertures (110) are equally spaced along said first outer annular wall (100).

20. An improved braking system as set forth in claim 18 wherein said fluid cylinder (40) defines said aperture (110) adjacent to said first outer annular wall (100) for allowing the fluid to flow around said first outer annular wall (100) and into said piston assembly (52).

21. An improved braking system as set forth in claim 18 wherein said fluid cylinder (40) defines a plurality of apertures (110) adjacent to said first outer annular wall (100).

22. An improved braking system as set forth in claim 18 wherein said master cylinder (30, 130) is further defined as a split master cylinder (130) having a first chamber (112) and a second chamber (114).

23. An improved braking system as set forth in claim 22 further comprising a first split cylinder piston (132) disposed in said split master cylinder (130) for compressing fluid in said first chamber (112) and supplying fluid pressure to said hydraulic fluid line (134) in a first linearly increasing function in response to movement of said first piston (54).

24. An improved braking system as set forth in claim 23 wherein said brake (11, 13) is further defined as a front brake (11) and said hydraulic fluid line (134) channels the fluid to said front brake (11).

25. An improved braking system as set forth in claim 24 further comprising a rear brake (13) and a second hydraulic fluid line (135) extending from said second chamber (114) of said split master cylinder (130) for channeling fluid to said rear brake (13).

26. An improved braking system as set forth in claim 25 further comprising a second split cylinder piston (138) disposed in said split master cylinder (130) for compressing fluid in said second chamber (114) and supplying fluid pressure to said second hydraulic fluid line (135) in a second linearly increasing function in response to movement of said second split cylinder piston (138).